IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Boman et al	RECEIVED CENTRAL FAX CENTER DEC 0 3 2004
Application No.: 09/869,365	Group Art Unit: 2879
Filed: 9/25/2001	Examiner: Karabi Guharay
Title: Gas Discharge Tube	Confirmation No: 3983
Attorney Docket No.: GOTE.P-044	
Customer No.: 021121	

DECLARATION UNDER 37 CFR § 1.132

The undersigned hereby declares as follows:

1. We are named inventors of the above-referenced application, and we are familiar with the application, including the claims thereof.

2. We understand that an Official Action has issued in this case in which the Examiner takes the position that the method of making the chemically inert surface is not germane to issues of patentability of claims to gas discharge tubes. We further understand that the method of making the chemically inert surface would be relevant if this method results in a different product from the method described in the cited prior art, as US Patent No. 4,407,849.

3. Tests have been conducted to demonstrate the differences between a chemically inert layer being applied to the electrodes of the gas discharge tune using a physical vapour deposition or chemical vapour deposition made in accordance with the process language in the claims of this application, and one made by the method of the prior art.

A number of surge arrester tubes of the prior art were prepared, as well as a number of tubes according to the present invention.

The carbon attached according to the prior art is attached to cover any surface unevenesses and metal grain boundaries. The carbon is attached mechanically, such as if added by way of a pencil, called Carbon in the following Table.

The carbon attached in the tubes of the present invention was attached using physical vapour deposition, called PVD in the following Table.

The tubes were all identical in all other respects.

The tubes were then tested to meet the specification according to International Telecommunication Union Standardization ITU:K12, which is a standard for surge arrester tubes. Thereby the tubes are tested
for destroying testing meeting

a. in a first test 5 ampere (A) 10 times for 1 second, whereby the current is a normal AC-current, 5 tubes of the respective manufacturing process;
b. in a second test 5 kA in a pulse wave raising during 8 µs and descending during 20 µs, a so called 8/20 pulse, 10 times5 tubes of the respective manufacturing process;
c. in a third test 2 x 100 A in a pulse raising during 10 µs and descending during 700 µs, 10/700 pulse, 500 times, 5 tubes of the respective manufacturing process. The tubes have three poles and to two of the poles 100 A are added, thereby stating 2 x 100 A;
d. in a fourth test by discharging a capacitor at ignition voltage, so called unloaded condition, where only some milliamperes passes the tubes, 5 tubes of the respective manufacturing process.

Then all tubes, in total 40 tubes, 20 of each manufacturing process are placed in a test frame where they are made subject to ignition voltages:

1. to provide a first breakdown value (or first ignition value) in darkness to avoid any photon influence, called Utia in the Table to follow;
2. to provide a following ignition value, called Utib in the Table to follow;
3. to provide a corona voltage (a mere delivery testing), called Ugi in the Table to follow;

whereby the tubes having a nominal voltage of 230 volts, shall stand at least 180 volts for Utla and Utlb, and a maximum voltage of 300 volts. The voltage inclined approach applied is 1 kV/s. The results of the tests are shown in the following Table.

Table
Tubes 1-20 are manufactured according to prior art, US Patent No. 4,407,849, and tubes 21-40 are manufactured according to the present invention

Tube	Utla	Utlb	Ugl	Type	Load	Result
1	402	319	245	Carbon	5A	Not ok
2	356	344	243	Carbon	5A	Not ok
3	360	321	211	Carbon	5A	Not ok
4	349	357	237	Carbon	5A	Not ok
5	286	252	266	Carbon	5A	Ok
6	389	338	233	Carbon	5kA	Not ok
7	325	288	247	Carbon	5kA	Not ok
8	369	360	237	Carbon	5kA	Not ok
9	317	280	243	Carbon	5kA	Not ok
10	397	388	247	Carbon	5kA	Not ok
11	361	275	221	Carbon	100A	Not ok
12	323	322	214	Carbon	100A	Not ok
13	349	330	213	Carbon	100A	Not ok
14	349	322	219	Carbon	100A	Not ok
15	331	292	227	Carbon	100A	Not ok
16	313	276	258	Carbon	Unloaded	Not ok
17	337	328	217	Carbon	Unloaded	Not ok
18	412	350	243	Carbon	Unloaded	Not ok
19	281	292	246	Carbon	Unloaded	Ok
20	333	316	212	Carbon	Unloaded	Not ok
21	270	226	201	PVD	5A	Ok
22	222	211	200	PVD	5A	Ok
23	250	221	179	PVD	5A	Ok
24	242	205	191	PVD	5A	Ok
25	210	199	184	PVD	5A	Ok
26	279	219	180	PVD	5kA	Ok
27	222	217	204	PVD	5kA	Ok
28	279	201	194	PVD	5kA	Ok
29	223	217	177	PVD	5kA	Ok
30	212	195	184	PVD	5kA	Ok
31	210	195	196	PVD	100A	Ok
32	222	197	178	PVD	100A	Ok
33	231	201	180	PVD	100A	Ok
34	269	211	196	PVD	100A	Ok
35	218	205	187	PVD	100A	Ok
36	227	206	189	PVD	Unloaded	Ok
37	220	207	180	PVD	Unloaded	Ok